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THE PHARMACOPŒIAL STANDARD FOR DESICCATED THYROID GLANDS.[1]

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During the past few years a great many experiments have been made in this laboratory upon the relation between the physiological activity of thyroid and its iodine content. These experiments, and practically all others that have been described in the literature, demonstrate this parallelism; it may therefore be concluded that at present the most satisfactory way to standardize thyroid is by means of the determination of the organically combined iodine which it contains. From the standpoint of the Pharmacopœia the question resolves itself simply into the selection of the most satisfactory method for the iodine estimation and the adoption of the most reasonable percentage content of iodine as the standard.

Of the methods which may be used for the determination of the iodine there are only two which need to be considered, viz., the older Baumann method which consists of fusion with caustic alkali, liberating the iodine by suitable means from the aqueous solution of the fused residue, extracting it with an immiscible solvent, and estimating its quantity colorimetrically, and the recently proposed Hunter method, which differs from the above in substituting alkali carbonates for the fusion, conversion of the iodine to the iodic state, and estimating its amount by a volumetric procedure. Of these two methods the latter has been found by us to possess advantages both in reliability of the results, and

[1] Read at the Boston Meeting of the American Pharmaceutical Association, August, 1911.

convenience of execution. Furthermore, from the point of view of the Pharmacopœia it possesses the advantage over the Baumann method that no analytical procedures, volumetric solutions, or reagents, new to the present edition of the Pharmacopœia, are required.

In his original paper [1] Dr. Hunter gives very clear and explicit descriptions of all the details of the process, and there is consequently little opportunity for uncertainty in regard to any part of the method. It is the rule, however, in Pharmacopœial descriptions of analytical processes, that only the essential features be included, consequently it appears desirable that a concise description of the Hunter method, in what may be called Pharmacopœial language, be given. Such an outline would be as follows:

Determination of Iodine (Hunter Method).—One gram of Desiccated Thyroid Gland is mixed in a nickel crucible of about 125 c.c. capacity, with 15 grams of a mixture composed of 138 parts by weight of anhydrous K_2CO_3, 106 parts anhydrous Na_2CO_3 and 75 parts KNO_3, and an additional 5 grams of this fusion mixture spread evenly over the surface. The crucible is then heated over a free Bunsen flame until no further carbonization is observed, it is cooled and the friable residue dissolved in about 150 c.c. of distilled H_2O. To this solution contained in an Erlenmeyer flask of about 500 c.c. capacity, is added approximately 50 c.c., or its equivalent, of fresh liquor sodæ chlorinatæ U. S. P. (containing 2.4 wt. per cent. Cl). The mixture is then treated with enough phosphoric acid (1 volume of the 85 per cent. syrup and 1 volume of H_2O), to produce a marked yellow tint of free chlorine, and an additional 10 c.c. of the phosphoric acid is then added and the contents of the flask boiled for about one-half hour or until the volume has been reduced to about 150 c.c. The liquid is cooled, 10 c.c. of 1 per cent. aqueous KI solution is added and the liberated iodine titrated with N/200 sodium thiosulphate, adding starch paste as the indicator just before the end of the reaction. The N/200 thiosulphate may be made by diluting 25 c.c. of exactly N/10 thiosulphate to 500 c.c.; it changes strength rapidly and should be prepared fresh at each time determinations are made. One c.c. of N/200 thiosulphate corresponds to 0.0001058 gm. iodine derived from the sample of thyroid used.

This method has been tested in this laboratory in comparison

[1] Hunter: Jour. Biol. Chem., 7, 321–349, 1910.

with the Baumann method, upon quite a large number of samples of commercial desiccated thyroid glands. The agreements in duplicate determination by the Hunter method were found to be considerably more uniform than those by the Baumann method, and the results in practically every case were from 10 to 15 per cent. higher. Since there is a reasonable source of loss at one step of the Baumann method, viz., the acidification of the aqueous solution of the fusion residue, and this particular cause of loss has been obviated by Hunter in his method, there can be little doubt that the higher results are the nearer correct.

Of the commercial samples which we have so far examined, some were purchased on the market during 1907, and the others recently received direct from two American firms which prepare thyroid glands for medicinal use. For these latter we herewith acknowledge our indebtedness to Armour and Co., and Parke, Davis and Co. The samples received direct are portions of the several lots prepared at the particular dates shown in the table.

PERCENTAGE OF IODINE IN COMMERCIAL DESICCATED THYROID U. S. P. AS DETERMINED BY THE HUNTER METHOD.

Laboratory No.	Source.	Per cent. I.
99	P. D. & Co. (1907)	0.185
99(a)	P. D. & Co. (1907)	0.185
100	P. D. & Co. (1907)	0.188
101	P. D. & Co. (1907)	0.153
102	P. D. & Co. (1907)	0.162
103	P. D. & Co. (1907)	0.219
105	P. D. & Co. (1907)	0.138
106	P. D. & Co. (1907)	0.218
106(b)	P. D. & Co. (1907)	0.212
116	P. D. & Co. (1907)	0.118
117	P. D. & Co. (1907)	0.117
118	P. D. & Co. (1907)	0.158
	Average	0.171
358	P. D. & Co. (1911)	0.206
359	P. D. & Co. (1911)	0.206
360	P. D. & Co. (1911)	0.154
361	P. D. & Co. (1911)	0.214
	Average	0.195
104	Armour & Co. (1907)	0.138
107	Armour & Co. (1907)	0.145
108	Armour & Co. (1907)	0.138
109	Armour & Co. (1907)	0.141
109(a)	Armour & Co. (1907)	0.142
119	Armour & Co. (1907)	0.135
120	Armour & Co. (1907)	0.129
121	Armour & Co. (1907)	0.140
	Average	0.138
345	Armour & Co. Dec. 16, '09	0.279
346	Armour & Co. Jan. 23, '10	0.095
347	Armour & Co. Feb. 15, '10	0.212
348	Armour & Co. April, '10	0.162
349	Armour & Co. May, '10	0.146
350	Armour & Co. June, '10	0.271
351	Armour & Co. July, '10	0.202
352	Armour & Co. August, '10	0.231
353	Armour & Co. Sept., '10	0.215
354	Armour & Co. October, '10	0.144
355	Armour & Co. Nov., '10	0.252
356	Armour & Co. Jan. 16, '11	0.219
	Average	0.202
357	Thyroid Proteid (Armour)	0.607

From the above results it is found that the average of the 12 P. D. & Co. samples received in 1907 is 0.171 per cent. I, while that for the Armour samples is 0.138 per cent. On the other hand the average per cents. for the recent samples are respectively 0.195 and 0.202, thus showing that in both cases products with higher iodine contents are being prepared. On the whole these results show a very commendable degree of regularity in the percentage of iodine in thyroid at present on the market. With very few exceptions none of these samples might be expected to produce a noticeable variation in physiological effect. There can be no doubt, however, that the interests of both the producer and consumer would be safeguarded by the establishment of a reasonable Pharmacopœial standard of iodine content. Judging from the results upon the samples supplied by the manufacturers themselves, such a limit could be fixed at approximately 0.2 per cent. I. without causing an undue hardship. This per cent. has already been adopted by an English firm. Of course sufficient latitude, of say 0.03 per cent. above or below this figure, should be permitted, thus making the extreme limits 0.17 to 0.23 per cent. iodine.

The remaining Pharmacopœial description which is necessary is that limiting the source of the raw material to certain animals and prescribing a reasonable limit of moisture and ash, which from our experiments might be placed at not exceeding 6 per cent. for the former and 5 per cent. for the latter, and finally the prohibition of all iodine in inorganic or any other form of combination than that peculiar to the thyroid.

In regard to the ash content it should be mentioned that in general those samples with the higher percentage of iodine contain the lower percentage of ash, and vice versa. Thus for instance, of 12 samples containing more than 0.2 per cent. iodine the variation in the ash content was from only 3 to 4 per cent., while 6 samples containing approximately 0.15 per cent. iodine contained more than 4 per cent. ash, and one sample with only 0.095 per cent. iodine contained more than 5 per cent. of ash.

It has recently been suggested by certain investigators that the iodine of thyroid may not all be present in an equally physiologically active form, and consequently that it was possible by certain manipulative processes to remove the less active forms and retain the more active portion in a product which is therefore supposed to contain iodine in a super active condition as compared with that

of the untreated material. A number of experiments which we have recently made with one of these products, designated as Thyroid Proteid, have failed to confirm this hypothesis. These recent experiments indicate even more conclusively than our previous work, the constant behavior of the thyroid-iodine substance and the close relation between the iodine content and the physiological activity of both the desiccated thyroids and the new Thyroid Proteid.

COLORIMETRIC TEST FOR CARAMEL.[1]

By F. A. Upsher Smith, Pharmaceutical Chemist.

Within the past year the question of standardizing the color of Caramel has been engaging the attention of pharmaceutical workers.

Dr. George A. Menge recently suggested the preparation of a standard solution of Caramel by boiling on a water bath for five minutes one-half gram of Sugar with 5 c.c. of a mixture of Sulphuric Acid 2 c.c. and water 10 c.c. The resulting mixture, partially cooled by the addition of 25 c.c. cold water, neutralized with Potassium Hydroxide Solution and finally diluted to 100 c.c. forms the standard color with which to compare commercial samples of Caramel.

The standard that I have used for several years seems to me to be one that is more readily applicable, as the materials are always on hand and the method is a simple and quick one. The method consists in matching a given sample of Caramel against a standard color consisting of a Nesslerized solution of Ammonia. For carrying out the test, make a stock solution of Ammonium Oxalate by dissolving .0417 gm. of Monohydrated Ammonium Oxalate, in crystals, in 1 litre of distilled water. Prepare the standard color by taking 10 c.c. of this stock solution, adding 38 c.c. of water and 2 c.c. of Nessler's Solution.

Match the standard color with the Caramel prepared as follows: Dissolve 1 gm. of the Caramel in water and make up to 1 litre. Run the solution from a burette into a Nessler glass until, on dilution with distilled water to 50 c.c., it exactly matches the standard color.

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[1] Read before the annual Convention of the Minnesota State Pharmaceutical Association, Duluth, Minn., July 12, 1911.

As an arbitrary standard, consider the standard Caramel as one of which 0.01 gramme (represented by 10 c.c. of the diluted solution made up to 50 c.c. with water) is required to match 50 c.c. of the color standard. Call this standard Caramel 100 per cent. Caramel as found on the market will usually test around this figure.

To obtain the Colorimetric value of any other Caramel divide 100 x 10 by the number of c.c. of the diluted Caramel Solution required. For example, in a particular test, 20 c.c. of the solution of the sample of Caramel were required to match the color standard. Then the Colorimetric value of the Caramel sample equals $\frac{100 \times 10}{20} =$ 50 per cent. In other words, this particular sample was one-half strength. This strength is a convenient one for making elixirs.

Among the advantages of this method I might mention that the tints of the Ammonia Solution and diluted Caramel Solution are practically identical. The materials for making the test are to be found in every laboratory and the apparatus required consists simply of a burette, pipettes, and two Nessler glasses. The two vials of liquid before you show how similar these solutions are in tint and illustrate the practicability of the method. This method is particularly valuable from the fact that it enables the operator to give a numerical value to any given sample of Caramel, a point of importance in making purchases, as well as in the manufacturing laboratory.

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THE FIXATION OF SULPHIDE BY BASIC BISMUTH COMPOUNDS.

BY J. L. STINGEL.

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In a letter to the *J. A. M. A.* (July 16, 1910, Vol. 55, p. 236), Dr. Hulse describes his experience with the so-called creams, milks or magmas of bismuth, in the treatment of infantile disorders, particularly calling attention to the fact that the characteristic brown or black color of the stools was absent.

At the suggestion of Prof. Sollmann, of the Western Reserve University Medical College, the writer made a number of experi-

ments in order to determine if there were any chemical basis for such a difference, in other words, whether the various basic bismuth salts really differ in their behavior toward sulphides.

In the first series of experiments the sulphides were applied directly to suspensions of bismuth salts (0.5 gm. with water q.s. —25 cc.). The reaction of the suspension to litmus paper was noted, through one set of samples a current of H_2S was passed to saturation. To the other Ammonium Sulphide $(NH_4)_2S$ sol (5 cc.) was added.

Suspensions	Reaction	H_2S	$(NH_4)_2S$
Bismuth Magma (dried) old.....	Neutral	Positive	Positive
Bismuth Magma (dried) new.....	Neutral	Positive	Positive
Bismuth Subcarbonate	Neutral	Positive	Positive
Bismuth Subgallate.....	Neutral	Positive	Positive
Bismuth Subnitrate	Neutral	Positive	Positive
Bismuth Subsalicylate.....	Neutral	Positive	Positive

Two samples of finished Creams of Bismuth, one made by the N. F. process, the other by Raubenheimer's modification, were tested with $(NH_4)_2S$; both gave dark ash colored ppts.

It will be seen that the sulphide is formed in all, but somewhat less readily in the old magma.

A second series of experiments was made to determine whether any bismuth goes into sol. in water. 0.5 gm. of the Bismuth subsalt in water q.s. 25 c.c. was allowed to stand 24–48 hrs., frequently agitated, filtered and filtrate brought up to 25 cc. These filtrates were tested the same as the first series.

Filtrates	Reaction	H_2S	$(NH_4)_2S$
Bismuth Magma (dried) old	Neutral	Negative	Negative
Bismuth Magma (dried) new.....	Neutral	Negative	Negative
Bismuth Subcarbonate.....	Neutral	Negative	Negative
Bismuth Subgallate.....	Neutral	Positive	Positive
Bismuth Subnitrate.....	Neutral	Positive	Positive
Bismuth Subsalicylate	Neutral	Negative	Negative

Conclusions.—The suspensions of the various basic bismuth salts are practically, equally effective in binding H_2S but in old magma this property is impaired.

Water left in contact with the basic bismuth salts dissolves some bismuth from the subnitrate and subgallate but none from the others.

STANDARD SURGICAL DRESSINGS.[1]

By Frederick B. Kilmer.

The subject of standardization of surgical dressings was a prolific theme of discussion during a period beginning in 1893. A reference to the journals of that time will disclose the questions then at issue, and need not be here entered into. To understand the present day situation, it will be necessary to review somewhat the history and technic of surgical practice.

A recent writer, Dr. Robert T. Morris, tersely sums up the situation as follows:

"Surgery is now in the dawn of the fourth era. In the days of Hippocrates surgery was heroic. That represents the first era. Then came Vesalius and the anatomists, and we had the second or anatomic era. Pasteur and Lister introduced the third, or the pathologic era. While this third, or pathologic era, is now prevailing to a great extent, it is rapidly passing to what this authority named as the fourth or physiological era."

The dominant idea of this fourth era is to prevent the development of bacteria in wounds, and to remove the products of infection by means of the art. The present day surgical dressing has been evolved out of the Listerian era. Peculiar to the Listerian era, especially in its opening period, was the use of antiseptics, which were applied in the form of sprays, irrigation, washing and the like.

Lister devised a series of dressings made by combining an antiseptic, chiefly carbolic acid, with resins and paraffin, somewhat resembling a cerate or plaster mass; this was poured while hot into meshes of lint, afterwards upon gauze cloth. The intention of this dressing was that the gauze should adhere to the flesh and that the vehicle or cloth should prevent the volatilization of the carbolic acid. Very quickly it was found more convenient to take a piece of gauze or cotton and dip it into antiseptic solutions such as were then in use.

The National Formulary of this period contained a formula for carbolized gauze, essentially an adhesive mass containing carbolic acid. The Formulary at this time adopted as a standard of fabric, a market gauze known as Lehigh E.

It is perhaps interesting to note that the amount and strength

[1] Read at the meeting of the New Jersey Pharmaceutical Association, June 14, 1911.

of the antiseptics used at this time were markedly different from these in use to-day. For example, we find at this time acid used in a strength of 1 in 12, 1 in 20; corrosive sublimate 1–200, and iodoform 20 per cent.

The method of preparing iodoform gauze in the practice of the originators may be mentioned: Iodoform was first used by dusting directly over the wound. Bilroth afterwards stated that when the iodoform was dusted over the fibre of cloth it was less irritating than when applied directly to the wound, and he later adopted a dressing containing 20 per cent. iodoform.

A feature of this period was the English practice of using boracic acid in a strength as high as 40 per cent. It is stated that this was fostered by the producers because the dressings were sold by the pound, and boracic acid was much cheaper than the fabric.

This was only two decades ago. Now we find that carbolic acid, the agent which helped in the revolution of the world of surgery in the time of Lister, has passed into disuse in surgical technic; that the strength of corrosive sublimate, and its preparations, has become weaker and weaker until there is now demanded a strength of 1–10,000; that iodoform has shrunk from a strength of 40 per cent. to 2 per cent.; and that many antiseptics once in very large demand and for which much was claimed have been forgotten.

In the later days of the third era of surgery and in the opening of the fourth era, antiseptic surgical dressings have been but little used. The demand is now for sterilized cotton, sterilized gauze, sterilized bandages. If antiseptics are used they are applied in certain classes of cases and as an adjunct—not as an important part of the technic. The surgeons are learning the value of procedures briefly characterized as "skilful neglect"; they are learning that antiseptics even in a weak solution are damaging to the growth of new tissue; that sterilized water produces untoward results; and that the much lauded hydrogen peroxide is destructive. Some go so far as to claim that cotton or gauze placed ever so gently upon a surface undergoing cell repair is harmful, because new cells are caught in the fibrous mesh and torn away when the dressing is changed.

All that is necessary, is a protection medium. At best in the present day practice we have to consider only plain absorbent gauze cloth in its various forms, such as bandages, tapes, etc., and absorbent cotton. These two substances represent almost entirely the surgical dressing of the period.

In view of the facts cited, and for other reasons which might be urged, it would seem to me to be a useless proceeding for either the Pharmacopœia or the National Formulary to attempt to standardize surgical dressings, especially those of the antiseptic or medicated type.

It will readily be seen that in the period covered by the Eighth Revision of the Pharmacopœia, this type of dressings has radically changed, and for the most part has gone out of existence, and unless the Pharmacopœia and the National Formulary are revised much more rapidly than has been the case in the past, any such standardization would become obsolete soon after its publication. Antiseptic dressings are the relics of a rapidly changing practice—an era of surgery which has passed, and thus for the druggist, belong to a declining trade.

As of some slight interest we may here insert a table prepared sometime ago by one of the manufacturers of surgical dressings, which was intended to show the consumption of surgical dressings made of cotton. It is as follows:

COTTON USED IN SURGERY IN THE UNITED STATES.

	1878	1886	1898	1910
Raw cotton (lb.)	1,000	5,000	20,000	25,000
Absorbent cotton (lb.)	5,000	250,000	3,000,000	5,000,000
Bandages (lb.)	10,000	20,000	100,000	200,000
Gauze (yds.)	1,200	120,000	20,000,000	50,000,000
Lint (lb.)	50,000	45,000	40,000	40,000
Miscellaneous dressings (lb.)	500	2,000	20,000	35,000

While the consumption of antiseptic dressings was not enumerated in the table, it may be stated that in the face of this enormous increase in certain types, antiseptic dressings have steadily and rapidly declined, until some of them have gone out of existence. As an example of these which have almost entirely disappeared we may instance salicylated acid cotton, styptic cotton, iodized cotton, iodoform cotton, Lister's cyanide of mercury and zinc gauze, and salalembroth cotton and gauze.

Various formulas for antiseptic cottons and gauzes may be found in the British Pharmaceutical Codex, the French Codex, and Deitrich's Pharmazeutisches Manuel, and other works to which the

reader is referred. They need not be discussed except briefly to call attention to some of the formulas given in the British Pharmaceutical Codex, where, under the head of Carbolized Cotton, attention is called to the fact that the preparation soon loses strength by exposure; it is only of approximate strength when freshly made.

In certain instances, in capsicum cotton and mercuric iodide cotton, it is recommended that the cotton be dyed in order that it may appear to the eye as of normal strength. In the case of corrosive sublimate cotton the statement is made that this soon deteriorates. In the case of carbolic acid gauze, cyanide gauze, and iodoform gauze—it is noted in the Codex that they undergo rapid change—and in the case of corrosive sublimate it is stated that the mercuric chloride undergoes decomposition in a month or six weeks.

These statements from an official authority would indicate that it would be difficult to formulate an absolute standard to be embodied in a Pharmacopœia, the legal authority by which preparations named therein shall be judged. In other words, a given antiseptic gauze, prepared exactly according to the official formula, would not and could not retain its conformity to the standard, and were the suggestions embodied in a most excellent paper by Geo. M. Beringer, Jr., AMERICAN JOURNAL OF PHARMACY, April, 1911, where formulas for the preparation of antiseptic gauze dressings are given, with the further addition of a process for sterilization by steam, dry heat, etc., adopted, the difficulty would be greatly increased. Mr. Beringer evidently fails to take into account the fact that his process of sterilization when applied to such preparations as iodoform, thymol, carbolic acid, and other volatile substances, would bring about a complete change in the product, so that the finished article is not what it started to be.

In the early days of the Listerian or antiseptic era of surgery, it was a common custom for the surgeon to prepare his own gauze at the operating table or bedside of the patient. This he did by simply dipping the gauze or cotton into a solution of a given strength and apply it direct to the wound, and this practice applies to a certain extent to-day as an emergency practice, except that the strength of the antiseptic solutions has been greatly modified.

It is my judgment that the pharmacist will only be called upon to prepare antiseptic dressings in extreme cases. Even in emergency practice, plain, sterile gauze or cotton is considered adequate.

When we take up the question of plain dressings, such as cotton

or gauze not impregnated with an antiseptic, there is possibly an opportunity for the Pharmacopœia or the National Formulary to establish certain standards.

I have discussed this question at some length (*Journal of the Society of Chemical Industry*, October 31, 1904). Here I have called attention to the fact that the Pharmacopœial standards thus noted were open for criticism.

In respect to the standards of the United States Pharmacopœia, among its faults are the tests for absorbency. Absorbent cotton, even when heavily charged with impurities, will, when pressed in the hand and placed on the surface of water, sink. The Pharmacopœia is very indefinite as to the amount of water to be used. The United States Pharmacopœia has it that, when purified cotton, previously pressed in the hand, is placed on the surface of cold water, it will absorb the water and sink, and the water should not acquire an acid or alkaline reaction.

The test of sinking in water is a test neither of purity nor absorbing power. Soap or glycerine will increase the apparent absorbency.

The following has been suggested by me as a more rational Pharmacopœial standard for purified or absorbent cotton, and these standards are those to which the leading brands now on the market will be found to comply. In other words, they are standards which are attainable, and which will exclude cottons of a low grade or to which foreign substances have been added:

Gossypium Purification.

Purified Cotton.

Suggested Standard.—The hairs of the seed of Gossypium (Fam. Malvaceæ) freed from adhering impurities and deprived of fatty matter.

White, soft, fine filaments, appearing under the microscope as hollow, flattened and twisted bands, spirally striate, and slightly thickened at the edges; inodorous and tasteless; insoluble in ordinary solvents, but soluble in an ammoniacal solution of cupric oxide.

When purified cotton, previously compressed in the hand, is thrown on the surface of cold water, it should readily absorb the latter and sink.

Purified cotton should contain no more than a very small quantity, if any, of visible impurities, and on combustion of five grammes or more should not leave more than 0.2 per cent. of ash.

Ten grammes of purified cotton are saturated with 100 c.c. neutral distilled water, the water pressed out and divided into two portions, each of which is placed in a white porcelain dish. To one portion is added 3 drops phenolphthalein T. S., and to the other portion one drop methyl orange T. S. Neither portion should develop a pink color (absence of acid or alkali).

If 20 grammes be extracted in a narrow percolator with ether until 300 c.c. percolate is secured, the percolate should on evaporation to dryness in a tared beaker leave a residue of not more than 0.5 per cent. of the weight of cotton used (limit of fatty matter). A blank test should be made with an equal quantity of the ether used.

If 20 grammes be extracted in a narrow percolator with alcohol until 200 c.c. percolate is secured, the percolate should not be of a blue or green tint (absence of dyes) and on evaporation to dryness in a tared beaker the residue should amount to not more than 0.5 per cent. of the cotton used (limit of resins and soap). A blank test should be made with an equal quantity of the alcohol used.

If 20 grammes be extracted in a narrow percolator with hot distilled water (80° to 90° C.) until 200 percolate is secured, the percolate should not be clouded (absence of soap), and on evaporation to dryness in a tared beaker the residue should amount to not more than 0.2 per cent. of the weight of cotton used (limit of soluble salts). A blank test should be made with an equal quantity of the water used.

Gauze cloth, otherwise known as surgical gauze, came into use as a wound dressing with Listerism. Lister first applied lint, afterwards what was known as cheese cloth, which by evolution, was converted into surgical gauze, and finally a combination of absorbent gauze and cotton. The tendency of modern surgical technic has been to simplify dressings. All other substances have to a large extent been abandoned and gauze made to constitute almost solely the dressing material.

A good quality gauze has numerous and obvious advantages over any other material for this purpose. It is highly absorbent, pliable, with an open texture that is firm and strong. It is free from the loose fibres and irritating particles found in unspun cotton. It is cool, light, and readily shaped into required forms.

Surgical gauze in the operating room acts primarily as a covering and protective, and if of sufficient thickness filters the external air that passes through to the wound. It is firm enough to bring together any incised or separated parts. Its fibres act, to a certain extent, as plugs or compressors to the small blood-vessels which may have been severed. The absorptive power of good gauze is ample to receive and retain a sufficient quantity of blood to coagulate and coat the injured part and thereby check the flow.

Gauze is also employed to absorb discharges which would infect the surrounding area if not seized upon by an absorbent and removed. In the early technic antiseptics of disinfectants were used to impregnate gauze dressings. In modern surgery a piece of sterile gauze is sometimes the only dressing employed.

Taken altogether surgical gauze may be considered the most convenient and the most useful dressing material now known.

Gauze cloth in the cotton trade is known as "Cheese Cloth," "Tobacco Cloth," or unbleached gauze, and it is quite distinct from surgical gauze, although large quantities of the former are used for surgical purposes. In England and on the Continent gauze is spun and woven solely for surgical uses, and there is one such maker in the United States.

The method of preparing cotton fibre for manufacture into surgical gauze is described in the paper heretofore cited, and consists of a long series of mechanical and chemical processes, a description of which lies outside of our present purpose.

In the surgical gauzes as found on the market there is a marked variation in the length of the fibre, the size and weight of the thread, yardage per pound, and other physical and chemical characteristics. The earlier surgical gauzes were made of Egyptian cotton, carried an equal number of threads each way, and were hand-finished. The hand-finish process kept the thread straight, the final product was less white, but more elastic.

In some samples of gauze in our market there will be found certain dressings or loadings added to improve appearance, to increase the weight, to assist in holding the gauze out to its full width, and the like.

In the cotton trade, gauze and cloths of this character are standardized by taking a square and counting the number of threads per square inch. For example, a high-grade gauze carrying forty longitudinal and forty-four cross threads per square inch, carried eighty-four inches of thread.

For the most part the so-called manufacturers of surgical gauze purchase their supplies of woven gauze, gray or bleached, from the various mills of New England. These mills supply some nineteen grades, beginning with a gauze carrying twenty threads by ten, or thirty threads per square inch.

It should be noted that very little if any surgical gauze in the market is fully thirty-six inches in width. This is accounted for by the fact that these goods are woven in the gray thirty-six inches wide, and it is not practicable to bleach the goods, render them absorbent, and retain their full width. The usual variation is about one inch per yard; in other words, the average width will be found to be about thirty-five inches.

The following table shows the threads per inch, the average yardage per pound of the best known grades of surgical gauze:

SURGICAL GAUZE.

Threads per inch.	Yards per pound.
44 x 40	9.38
32 x 36	14.81
28 x 24	16.00
24 x 20	18.83
20 x 14	23.20

The National Formulary (First Edition), adopted as a standard two brands, Lehigh E. and Stillwater. These grades (now practically out of market) contained about sixty-four threads per square inch, and their weight was a little less than 800 grains to the square yard.

The nearest approach to a standardization of plain surgical gauze is one which I understand has been adopted by the Bureau of Municipal Research, which bureau is making an attempt to secure uniformity in the supplies for the various departments of New York City.

In respect to gauze the requirements are that the gauze shall count in the finished state not less than the total number of threads per square inch specified, shall not exceed the yardage per pound specified; it shall be free from loading, and shall be acceptable by the bureau as first quality in every respect. Gauze delivered under these specifications is required to be made from clean, white,

long cotton fibre, fully bleached and absorbent, of soft finish, and upon extraction with acidulated water (two per cent. hydrochloric acid) of not more than one per cent residue, and the reaction shall show no reaction for starch, soap, dextrin, glue or other filling.

The object of the foregoing test—extraction with acidulated water—is to prevent the addition of starch, soap, dextrin, or glue for making weight, increasing the apparent size of thread, etc.

This requirement would seem to be about as far as any standard could be expected to reach; indeed, the great variation in the requirements of the surgeon and the manifold mechanical household uses of gauze create a legitimate demand for a greatly varying material.

Mr. Geo. M. Beringer, Jr., in a paper heretofore cited, raises the question as to whether the Pharmacopœial recognition of medicated gauzes and surgical dressings would be a mistake. He states that it has been hinted that the pharmacist has not the facilities and training necessary for the preparation of surgical dressings, and he urges that this arraignment is not complimentary to the intelligence of the American pharmacist. He calls attention to the fact that the pharmacists of Germany, Austria, Sweden, Belgium, and elsewhere prepare such preparations from formulas in their respective pharmacopœias.

To my mind there is no question but that the pharmacist has the intelligence and perhaps the training necessary for the careful preparation of surgical dressings. It is not a question of can he, but will he take the care to properly prepare these dressings.

I have discussed this question at some length in a previous paper, in which the question was raised as to the relative fitness of the surgeon, the pharmacist and the manufacturer as makers and purveyors of surgical material. In this paper I stated that we may well claim for the American physician the highest of honors, we should all reverence the skill and genius of the American surgeon, yet it must be admitted that their offices are not as a rule the most suitable spot for the preparation of dressings. Contact with the clothing and person of patients carrying contagion of every name and kind, together with a thousand and one avenues through which the streams of infection may pour into their rooms, is evidence of the unfitness of the surroundings of the physician for the preparation of surgically clean dressings.

Likewise in hospitals, many of which are attached to medical

colleges, where students and operators carry infection from hundreds of sources of contagion, and where the dangers of infection can scarcely be avoided.

When dressings are prepared by the pharmacist the work is of necessity performed in the druggist's back room—a place which comes far short of conditions known as surgical cleanliness. The pharmacist, though ordinarily clean in person and habits in the pursuit of his calling, is far from aseptic. Like the physician, he is constantly in contact with infection through the person of his patrons.

In a few terse sentences Mr. Beringer attempts to convert the druggist's work table into a room suitable for the preparation of aseptic dressings. I doubt his ability, or the ability of the average pharmacist, to take these products into his own back room and produce therefrom sterile dressings. In advance, I would acknowledge my own inability to do so, notwithstanding a generation of experience along these lines, and should the necessity arise for an important operation in my own case, I certainly would reject dressings prepared either in a hospital, a physician's office, or the pharmacist's back room in favor of these made by a reliable manufacturer.

The facilities of the manufacturer whose whole organization is adapted to the production of surgical dressings are certainly more perfect than those of the surgeon to whom such work is only incidental; the employment of a room from which pathogenic organisms are entirely excluded is superior to the conditions in the hospital or doctor's office. Rooms in which no work is undertaken except the handling of aseptic material will certainly be more nearly surgically clean than a place where infection has constant access. Persons whose only calling is that of preparing surgical material, who have been trained in the principles underlying the disinfection of dressings, are much more competent to handle the same than the doctor's assistant to whom such work is of necessity relegated. Further, an organization devoted exclusively to the manufacture of dressings, once having the table arranged to prepare a yard of dressing, can produce any number of yards more perfectly than if done as occasion may require.

To the manufacturer and the dispensing pharmacist is due the credit of having made possible the convenient application of the principles of modern surgery.

Conclusion.

A summary of the thoughts embraced in the foregoing paper is as follows:

The rapidly changing conditions of surgical methods would not seem to warrant the insertion in the United States Pharmacopœia or in the National Formulary formula for the preparation of antiseptic surgical dressings. Any standard adopted for medication for surgical dressings would be liable to become valueless long before the next revision. A standard for antiseptic dressings once embodied in the Pharmacopœia would become complicated in the administration of food and drug laws by the constantly changing requirements of surgical practice.

It might be possible to establish official methods of assay by which antiseptic dressings could be judged. The standard for absorbent cotton in the eighth revision of the United States Pharmacopœia should be revised, and a standard is suggested herein. It would be possible to establish a standard by which surgical gauze and dressings made therefrom could be judged.

The principal requirements for surgical dressings made of cotton or gauze at the present time are purity and sterility; such dressings are known as plain aseptic dressings.

In the author's opinion, neither the facilities of the practicing physician, the hospital, nor those of the ordinary pharmacist are adequate for the preparation of dressings to meet modern requirements. The preparation of this class of material, like that of serums, toxins, and the like, requires special training and special facilities for their manufacture. Until economic conditions shall greatly change it is the author's opinion that the preparation of this class of material had best be relegated to those possessing the required facilities.

SOME QUERIES ON ALKALOIDAL ASSAY.

By W. A. Pearson, Philadelphia.

Much good work has been recently presented on alkaloidal assay, and it is reasonable to expect that much more satisfactory and accurate methods will be inserted in the next Pharmacopœia of the United States.

There are a few differences of opinion in regard to technic, however, that should be agreed upon before uniformity is to be expected.

Amount of Moisture in Drug.—Crude drugs are not as a rule assayed in the exact condition in which they are received. Frequently they must be dried before they can be ground and this loss of water may amount to as much as 30 per cent. Is it advisable to compute the results obtained to correspond to the original condition of the drug or to the moisture free basis?

Fineness of Powder.—It is well known that when a powder is ground, all of the particles are not of equal size and that if all the drug is ground and only the particles of a certain size are taken the sample will not be a representative one.

Would it therefore be advisable instead of stating that the powder should be of a certain fineness to state that it should be at least of a certain fineness or between certain limits of fineness?

Temperature.—In certain alkaloidal determinations the temperature plays an important part, in the results obtained. For example, in the assay of opium, the crystallization flask is directed to be set aside in a *moderately cool place.* No limits are given in U. S. P. for "moderately cool" and this temperature has been variously interpreted by different analysts. It is certain that much larger crystals are obtained near 0° C. than at slightly higher temperatures; it therefore seems important to ask what influence does temperature have upon the results of an alkaloidal assay?

Fumes.—Free alkaloids very readily combine with acids, and the analytical laboratory usually contains fumes of hydrochloric or nitric acids. Before the delicate titration of an alkaloidal residue is made there seems to be danger of these fumes combining with the alkaloid and lowering the results. To what extent do the fumes ordinarily present in the laboratory influence the results of an alkaloidal assay?

Indicators.—It has been claimed by the analysts in one lab-

oratory that cochineal is the best indicator for all alkaloidal titrations; the men in another laboratory prefer the general use of iodeosin. Does the indiscriminate use of these indicators give concordant results and would the assay be considered as being made according to the U. S. P. if an indicator not specified in the particular assay were used in the titration?

Color of End Point.—In all the alkaloidal titrations, the U. S. P. specifies that the standard solution should be added until a certain color is obtained. Owing to differences in judging the end point and the absence of a definite color standard a considerable variation is to be expected.

Ought not the end point of an alkaloidal titration be determined by matching a certain color of a standard chart under definite conditions?

Blank Determinations.—To avoid the difficulty of judging the color of the end point and to provide a check on the solutions being used a blank determination is usually made by the most analysts. Even this method is faulty where the alkaloidal residue still retains some color. Would it be advisable to specify that a blank test be made with every alkaloidal titration?

Amount of Solvent.—Most practical analysts who are regularly making alkaloidal assays are agreed that insufficient solvents are specified for extraction of alkaloids in many of the U. S. P. processes. For example, in the assay of Nux Vomica after oxidation of the Brucine the quantity of chloroform specified will not leave the supernate liquid clear nor will twice the specified quantity but by repeated extractions with chloroform the supernatant liquid will become clear. Is an assay made in accordance with U. S. P. process, when excessive quantities are used? If additional quantities of solvents are allowable, should each extraction be made until no precipitate is obtained with Mayers' reagent?

Identification of Alkaloids.—In the determination of alkaloids from crude drugs the U. S. P. makes no provision for the identification of alkaloids extracted. Would it be advisable to insert identification tests for the alkaloids after they have been extracted and estimated?

Physiological Tests.—After the alkaloids have been extracted and estimated, would it be advisable to insert physiological tests and determine the minimum lethal dose and note the characteristic action?

Conclusion.—In presenting the above queries I realize that I am presenting problems that can only be settled by extensive experimental work. The main practical question is to decide how great these various factors probably are and whether the necessary co-operative work is to be undertaken.

ANALYTICAL DEPARTMENT, SMITH, KLINE AND FRENCH CO.

THE TEACHING OF AND EXAMINATIONS IN PHARMACOGNOSY.[1]

BY HENRY KRAEMER.[2]

While it is true in teaching that success depends in large part upon the earnestness and personality of the teacher as well as his knowledge of the subject, much also depends upon the methods that are followed. It was the Agassiz method that developed a school of clear-headed and distinguished American zoölogists. Agassiz's words, "study nature, not books," ring true and are well worthy to be framed and hung up prominently in all laboratories. Some teachers feel that they would like to impress upon the students the facts which they have acquired or the point of view which they have attained. Others use some particular text-book and it is upon the facts that are to be gleaned from this that the student's efficiency is finally determined. A happier method is the one in which after certain fundamental principles have been mastered the teacher draws out from the student what he observes with the specimen in hand. Of course to the ordinary student this may be irksome as it is often difficult for him to discern the progress that has been made. It is also harder for the teacher, as in nearly every class there will be found some who are keen observers and likely to ask questions which require the teacher to admit that he does not know it all. It has usually seemed necessary in order to maintain discipline for the teacher to stick near his desk and the student to follow the exercises laid down. Happily

[1] This is a continuation of a previous paper presented to this Association (see Proceedings, vol. 56, 1908, p. 672).

[2] Presented at the Boston Meeting of the American Pharmaceutical Association, August 17, 1911.

for all concerned we are approaching a condition when it is possible for student and teacher to work together, each receiving an inspiration from the other and each contributing to the *summum bonum* of knowledge. I have in a previous paper indicated what I consider to be the principal object in the study of Pharmacognosy as it relates to the training of the pharmacist. I said then that in view of the problems that confront us and that are constantly arising, the aim first should be the attainment of a knowledge of the characters of drugs rather than a general knowledge of them. The object of a course in Pharmacognosy is I take it not that a student shall examine so many drugs, but that he will be able to use his eyes so that he can determine whether a drug corresponds to a description, as that of the Pharmacopœia, whether the specimen is all of one kind, the quality of it, and similar practical questions when he is in business. We all know that a student usually examines but a small sample of the drug. His specimen may differ from that of his comrades in certain particulars, as in the case of Rhamnus Purshiana and this is confusing. But let him examine, say 5 or 10 pounds of this drug, and the characteristics will be so impressed upon him that he will be able to recognize even the fragments of it.

While at college a student can not possibly study thoroughly all of the drugs of the Pharmacopœia and National Formulary. I am beginning to be more and more impressed with the foreign method of teaching, in which the study is limited to a number of important drugs, or to such drugs as those the study of which has a didactic value and in the case of which the work is required to be well done. Let the students spend 3 or 4 hours upon each of the 22 important official drugs * and he will not only know these well, but he will find it comparatively easy to acquire a knowledge of other drugs under circumstances that will not make him confuse so many of them. I have in preceding years, because of the lack of time at my disposal considered from 6 to 10 drugs in the course

* The following are the drugs that I include in the list of the 22 most important drugs of the Pharmacopœia: Acacia, Aconitum, Belladonnæ Folia, Cantharis, Capsicum, Cinchona, Cinchona Rubra, Digitalis, Ergota, Gentiana, Ipecacuanha, Jalapa, Lycopodium, Nux Vomica, Opium, Podophyllum, Quassia, Rhamnus Purshiana, Rheum, Senna, Sinapis Nigra, Strophanthus, Zingiber. Of course there are a few other drugs that might be considered equally as important as some of these by some teachers.

of a 2-hour period. The result was one of confusion to the student as was manifest in subsequent examinations. I find that students are better able to recognize crude drugs after they have handled a single lot during several hours, including the making of sections and the examination of them with the microscope.

During the session that a particular drug is being studied by the students it is a good thing to break up the monotony of the work by talking about the plant yielding the drug and if possible by having some growing specimens in a prominent place and in addition a herbarium specimen of the plant for each student. At the same time one can give some facts regarding the distribution of the plant, the history of the drug and its important constituents. In this way a student is enabled to concentrate himself upon a single drug, and thus the facts impress themselves and he acquires a knowledge of the drugs in a more natural way.

Permanent mounts of drugs should be at his command for purposes of microscopic comparison. The sections should be made by the student and these should not only be cross-sections, but tangential-longitudinal and radial-longitudinal as well. He should keep a record of his observations and make a series of drawings illustrating what he has seen, using both the simple microscope and the compound microscope. Sufficient assistance should be provided so that a student's questions may be answered and his specimens or slides examined, as he should not leave the laboratory without all doubtful points being made clear.

The powdered drug should be examined after the studies on the crude drug have been completed. It is surprising to see how the student views the whole subject after he has spent an afternoon first examining the crude drug with the naked eye and the aid of the simple microscope, then making sections and carrying on his studies with the compound microscope, and finally working with the powdered drug. He finds that the study of powdered drugs is not so difficult and furthermore, as in the study of Belladonnæ Folia an adulteration of poke leaves, is more readily determined in a powdered drug than in the crude drug. He finds as a matter of fact that one of the simplest methods in the examination of a number of drugs that may seem to be of good quality is to take 5 or 10 grams of the material selected from various portions of the lot, powder it in a small mill and examine the powder under the compound microscope. I have seen students again and again

find Poke Leaves in a sample of Belladonna Leaves that otherwise would have been pronounced of good quality. While we require students to make a permanent collection of the specimens of crude drugs which are furnished them for study, I feel that the time is at hand when we should require them to make a permanent collection of microscopic slides, illustrating these 22 important official drugs. As the compound microscope can be had at such a reasonable figure at the present time I think that every thing should be done to encourage students to invest in this piece of apparatus, as it is indispensable not only in detecting adulteration, but also in determining and establishing confidence in reliable jobbing houses.

EXAMINATIONS.

After the student has taken up the practical studies of vegetable drugs and has concentrated his attention on the most important of those that are official the question is What tests shall be applied to determine his qualifications to be a safe pharmacist? Of course, the professor has the advantage of seeing the student day after day, and if he has been faithful in attendance and has conscientiously carried on the work, the teacher must know his general ability after the entire course of instruction. Usually, however, an examination is given for the purpose of testing a candidate's knowledge of the subject. But what is the test of knowledge? What is the nature of the questions that are to be asked to test the candidate's knowledge in this particular branch? We have all been familiar during our college days with men who failed in examinations and who really knew more about the subject than some of those who passed the examinations. The secret of the latter in passing an examination very often consists really in concealing from the examiner what they do not know. If this is done discreetly and the student can impress upon the examiner what he does know he will probably pass the examination. There are some examinations where this can be rather easily done and this is particularly true of examinations in Materia Medica as conducted in most Colleges of Pharmacy and by Boards of Pharmacy.

In these examinations the memory test is largely relied upon. So much hinges upon giving the "Natural Orders," "Habitats," etc. The student preparing for these examinations usually uses some book in which in a series of parallel columns are given one or two words covering the information that is expected of him

in the examination. Partly because the subject of the examination is so lifeless, the student has never been stimulated in his studies. Furthermore because the examination is so perfunctory the student's thoughts are seldom carried beyond these parallel columns, and he can truthfully say that the whole subject is dry and uninteresting. Besides on this account the general inference is that the subject is of little or minor importance.

Occasionally we find teachers who dilate upon the subject of the history of drugs and the countries in which the plants are indigenous, but say practically nothing more of the drug than is contained in the Pharmacopœia. We find students who have had a good preparatory education who believe that in this knowledge they have valuable information to fit them to become retail pharmacists and usually they are very easily confused when it comes to the identification of specimens. Sometime ago I heard a judge of one of our city courts make some remarks in the course of an after dinner address that impressed me very much. He said: "The fact that you know that a certain drug is gathered in the Himalayas is not going to make you either a safe or successful druggist, you must know the nature and property of the substances you are handling and how safely to fill prescriptions and a good many other things that you only learn by experience." Any practical pharmacist knows this and yet the burden of most examinations in Materia Medica are upon questions that few teachers and examiners would pass an excellent examination upon without considerable study beforehand.

While the aim of an examination before a Board of Pharmacy appears to be to test a candidate's knowledge, the college examination should be with an additional object, viz., to round out the knowledge gained during the course and give the student self-reliance and confidence in himself. It should not be with the object of getting him ready to pass the Board of Pharmacy examinations as now conducted.

Now that the Boards of Pharmacy are seriously considering improving the methods of examination it seems to me that we might well ponder upon the subject and try to look at it from the point of view of testing a candidate's fitness to practice pharmacy. In my judgment we must eliminate the idea that because a professor gives an interesting historical lecture upon certain drugs it is expected that the student will have all of this information at his

fingers' ends. There are some things taught which make for the culture of the pharmacist and happy is the student who can sit under a professor that is learned and well balanced. There is something deeper and more important to the pharmacist than this general knowledge of drugs and that is a knowledge of the characters of the drugs which he handles in his practice. The history of each drug is exceedingly interesting, but this does not become a real part of a pharmacist's knowledge, save after many years of experience and reading, which he can do without the aid of a teacher, and when his horizon has been broadened. In one sense the same may be said of descriptions of plants yielding drugs. As in the learning of a foreign language we lay the foundation by first taking up the grammar of the subject and later taking up as much reading and study of its literature as time and inclination permit, so in the study of Pharmacognosy we first take up the specific characters and properties of a drug and then follow this by as much reading and study of a general character as we are able to do. There is, however, nothing stimulating and so far as I can see it, nothing useful in asking a question like the following: "Nux Vomica: (*a*) give habitat; (*b*) origin; (*c*) part used in medicine; (*d*) active principles; (*e*) official requirement." Ever since the days when I was a quizz master my conviction has been growing that questions of this type, which are asked on every hand, do more harm to the cause of teaching in pharmacy and to the development of professional pharmacy than is generally realized. Every man's knowledge must fit in this groove. There is no individuality to be developed, no increase in knowledge expected and no vitalizing influence in either the subject as taught or the examination which follows.

The following is another type of question that is asked in certain States by the Boards of Pharmacy and illustrates very forcibly the type of questions that should not be asked. The questions for the most part being confined to unimportant drugs and specifying the reading of certain books makes it obligatory upon the candidate to determine before taking the examination the books on which the examination is based. The following is a typical example: "What dose is given in Remington's Pharmacy, fifth edition, of the following: Rhus Glabra, is it considered a poison? (*b*) What is a minimum dose of Quercus, Rubus, Geranium? What is the common name of Convallaria? Name 22 incompatibles with mercuric

chloride (Corrosive Sublimate). There are 33. Name as the tenth edition of Potter's Materia Medica gives them. Does Potter's Materia Medica say Mercury is a tonic? Answer *Yes* or *No.* Does he say it is a poison? A purgative? From where is Veratrum obtained? And in action, is it related to Aconite in any form? Answer *Yes* or *No.* What is the average dose of Eucalyptus as given in Potter's Materia Medica, tenth edition?"

In addition to the slovenly construction of the questions and the veritable hodge-podge manner of associating the subjects I think it is quite clear how questions of this kind really hinder sound pharmaceutical education. I think students are to be pitied who have to run the gauntlet of such examinations in the various States, and the wonder really is that young men of education and good training are willing to come into the ranks of Pharmacy. It is quite clear on the face of it that the examiners who ask such questions are quite incompetent to fulfil their duties.

Of all subjects that are living, interesting, full of the greatest of possibilities and of the greatest of benefit to the professions involved, there is no subject that offers such a fertile field for the teacher and that can hold the interest of the student like that of pharmacognosy. I am quite aware that while my enthusiasm may be shared by some teachers my point of view may not have occurred to them. However, I would say that the teaching of pharmacognosy in its direct application to retail practice will prevail and if the examinations bring out the practical knowledge of the candidate we will find that the student will also have attained culture and those things that constitute the professional man.

I have often thought that it would be a good thing if Pharmacognosists could meet together occasionally and discuss not only methods of teaching, but the subject of examination questions. In order that we might improve our work and be able to utilize the results obtained by our colleagues in other colleges I have requested a number of professors to send me a set of model questions. I regret that there is not space for me to give all of these at this time. One professor has written stating that as his course consists entirely of laboratory work it does not involve questions. This is certainly novel and I should like to know how it is done. Apparently the professor relies entirely upon the students' work during the course. I feel that really every teacher ought to know before the end of the term the standing of every student, but I still feel as already

stated, that an examination should be held more for crystallizing out the thoughts of the students and the knowledge gained than for any other purpose. In other words, an examination should be in the nature of instruction to the student and should give him an opportunity of showing to what extent he has mastered the subject.

Professor Daniel Base has written in a spirit with which I heartily coincide, and I quote the following from his letter:

"I think State Boards would do well to confine questions in Materia Medica to the chief inorganic, vegetable and animal drugs, and not ask questions about things with which the average pharmacist may have to do but once or twice in a year. The questions might reasonably involve a knowledge of botanical source, part official, when collected and why, description in correct terms, of the whole drug, drugs that resemble each other outwardly and how to distinguish them, the principal and some of the less important constituents, forms in which the drug is used, usual action of the drug, antidotes to principal poisonous drugs or their preparations, doses. I would advocate framing questions both in Board examinations and those of the college in such a manner as to test the candidate's thinking ability rather than his cramming powers. Perhaps this cannot be done so thoroughly in Materia Medica as in Chemistry or Pharmacy, because of the nature of Materia Medica, which necessitates memorizing to a greater extent than the other two subjects do. Examinations in Pharmacognosy, in addition to requiring the recognition of drugs from outward physical characters, taste, odor, fracture, chemical tests, etc., would properly require also microscopic knowledge, but I fear that the teaching and requirements in some States have not advanced to such a stage as that the Boards could be persuaded that the examinations should include microscopic work. In those advanced States in which the Boards would not hesitate to ask questions involving microscopic knowledge, I think the questions should be moderate and practical and perhaps along such lines as the following:

1. Relation between magnification and focal length.
2. Mounting of objects.
3. Familiarity with a few staining reagents, permanent and temporary.
4. Process of making a permanent mount with two differential stains.

5. Ability to recognize and name the different kinds of cells in a section.

6. Naming the kinds of cells in a powdered drug, especially such as stone, bast, tracheids, trichomes."

One of the questions in the list submitted by Professor G. H. Jensen strikes me as being very practical. It is "In the examination of a powder, what elementary structures place it into the class of barks, woods, and leaves?" Professor Albert Schneider has submitted a similar question which reads: "Name the tissues and tissue elements that are found in barks, and roots, in leaves, in seeds, in woods."

I also received a number of other lists of questions, but they did not strike me as having anything novel in them and so I do not give them at this time, although I will probably refer to them in another paper.

Professor Sayre has written in addition to sending me a list of questions some things that I feel like adding in concluding this paper. He says: "Permit me to state that you could not get ten men to agree on any set of questions nor to agree on the policy of making up the questions, but I venture to give you my own ideas in the limited time I have to dictate them offhand.

"In the first place, questions should have a carefully selected variety, that is, there should be a variety chosen from different classes of crude drugs. In the second place in almost every question something should be drawn out of the student in his answers as to the microscopical and, now and then, the botanical characteristics. Third, there should be sometimes added to the questions a general question rather than a specific one, such as 'Write a paragraph or a treatise of at least 250 words on what you know of a certain subject.' In the fourth place, I believe that examinations should represent modern thought and teaching and should include laboratory demonstrations where the student should have an opportunity to show, first, that he knows how to use the microscope, and second, that he has done microscopical work, and third, that he shall be able to demonstrate that he is familiar with certain microscopical processes. Fifth, I think that examinations in Materia Medica should be confined to well established and commonly recognized drugs."

In summarizing I may say then that in discussing this subject

of the teaching and examinations in Pharmacognosy that I have not been aiming to establish an ideal so much as to direct attention to the need of our considering our work from the standpoint of the practicing Pharmacist. There are many things that every Pharmacist should know, and these relate especially to the specific characters and properties of the important drugs. There are other things which he may know of certain drugs, and indeed, should know, to stimulate him in his professional work. But these are subjects that can be better handled in an oral examination than in written examinations. In Pharmacognosy we have a subject dealing with natural products and we should treat it in a natural way, instead of according to hard and fast lines and involving the framing of questions in the form of riddles or conundrums which depend for their solution upon so much memorizing rather than clear thinking and direct study of the drugs themselves, as we do in the study of other physical objects.

THE BOSTON MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

By M. I. Wilbert.

The Boston meeting of the American Pharmaceutical Association will long be remembered as one of the most eventful meetings in the history of that Association. This distinction will be given it not because of the superior nature of the programme offered or the unexpected announcement of an unusual scientific achievement, but because at this meeting the Association chose to break with the past and to engage in enterprises more or less new and untried so far as the organization itself is concerned.

Many, if not all the three hundred or more members of the American Pharmaceutical Association present at Boston no doubt expected and were therefore prepared for the developments announced in the course of the week and many, if not all of the members present were thoroughly in accord with the programme as outlined and wish the officers for the coming year well in the development of their pioneer work.

While the happenings at Boston were neither unexpected nor revolutionary in nature, they nevertheless entail changes in policies

and an entire recasting of the relations hitherto held by the American Pharmaceutical Association to the several branches of the drug trade and any predictions as to the ultimate outcome must necessarily be based on idle speculation.

A more comprehensive idea of the nature of the changes proposed can perhaps best be given by a more or less chronological report of the proceedings as reflected at the several sessions of the Association attended by one individual.

The first general session of the 59th annual meeting of the American Pharmaceutical Association was called to order by President Eberle shortly after 3 o'clock on August 14, 1911, at the Hotel Vendome. After a few preliminary remarks by the president and a short prayer by Rev. A. R. Williams, of East Boston, the Lieutenant-Governor of the State of Massachusetts, Louis A. Frothingham, welcomed the Association on behalf of the State, and the acting Mayor of Boston, Walter L. Collins, offered the hospitalities of the City of Boston.

These addresses of welcome were replied to by R. H. Walker of Gonzalez, Texas, who called attention to some of the advantages of membership in the A. Ph. A.

George S. Smith, in a short and interesting address, called attention to a number of facts regarding the commercial importance of Boston and the surrounding towns and pointed out that few sections of the country are as thickly populated as is the territory adjacent to and more or less dependent on the City of Boston.

C. H. Packard, on behalf of the druggists of the Boston district, extended to the members of the American Pharmaceutical Association, their relatives and friends, a hearty welcome to the Hub.

These several addresses were replied to by C. M. Ford of Denver, who in a facetious address reminded the members that the time had come for them to again think of visiting the central portion of the United States and he, therefore, extended an invitation to meet in the City of Denver in 1912.

The annual address of the president called attention to many of the shortcomings and needs of those engaged in the drug and apothecary business and contained a number of suggestions for bringing about changes in present-day conditions. The greater portion of the address was subsequently referred to a committee of five members, while the recommendations referring to legislation

were referred to the Section on Education and Legislation for further discussion.

The felicitations of the members of the N. W. D. A. were presented by Fred. L. Carter, and the greetings of the N. A. R. D. were presented by F. C. Godbold. Dr. R. H. Hatcher extended the good wishes of members of the American Medical Association, M. I. Wilbert presented the felicitations of the Surgeon-General of the Public Health and Marine-Hospital Service and Prof. José P. Alacán presented greetings from the pharmacists of Cuba.

The second general session of the Association was largely devoted to reports of committees and the annual reports of the officers of the Association. A rather unusual diversion from the routine nature of these reports was the announcement made by Jos. P. Remington, as Chairman of the Committee of Revision of the Pharmacopœia of the United States, that the report of the Sub-Committee on Scope had finally been acted on by the members of the executive committee and that he was now prepared to give publicity to the final decisions on the scope of the U. S. P. IX. He then introduced Dr. Solomon Solis-Cohen, who as the invited guest of the Association, presented an interesting and well rounded address in which he discussed the influence of the U. S. P. on the practice of medicine. This address was enthusiastically received and the general conclusion that the Pharmacopœia of the United States should contain formulas or descriptions for " all preparations that can be used to advantage in caring for the sick " is so obviously sane that it will no doubt receive the endorsement of all well meaning pharmacists as well as all seriously minded physicians.

This address was commented on by a number of members present and, on motion, it was agreed to give wide-spread publicity to the same. It was resolved to have the address printed in pamphlet form and distributed among medical practitioners.

The committee on nominations gave out the following names for officers to be elected by a mail ballot during the year: For president, W. B. Day of Chicago; Charles Holzhauer of Newark, N. J.; William Mittelbach of Boonsville, Mo.; for vice-president, José P. Alacán of Havana, Cuba; C. M. Ford of Denver, Col.; Otto F. Claus of St. Louis; R. H. Walker of Gonzales, Texas; C. A. Mayo of New York; W. J. Teeters of Iowa City, Iowa; J. O. Burke of Nashville, Tenn.; and A. H. Clark of Chicago; for council, F. C. Godbold of New Orleans; W. C. Alpers of New

York; George B. Kauffman of Columbus, Ohio; C. W. Johnson of Seattle, Wash.; L. E. Sayre of Lawrence, Kansas; E. Berger of Tampa, Fla.; J. C. Wallace of New Castle, Pa.; F. W. Meissner, Jr., of La Porte, Ind.

The sessions of the several sections were, in many instances at least, held simultaneously and the precedent established in previous years is now thoroughly well established and will in time, no doubt, lead to the shortening of the time required for the annual meeting of the Association, so as to make these annual gatherings of greater interest and value to the really busy men in our calling.

SECTION ON SCIENTIFIC PAPERS.

At the first session of the Section on Scientific Papers which was held on Tuesday afternoon simultaneously with the first session of the Section on Commercial Interests, a radical modification in the By-laws of the section was proposed by Chairman Clark and endorsed by the members present. These changes were subsequently endorsed by the Council of the Association and the necessary changes in the By-laws of the Association were acceded to at the concluding general session. In future the Section on Scientific Papers will be in position to conduct its business independently of the other sections and will therefore have sufficient time to discuss all of the communications read at the several sessions.

This year there were upwards of 25 papers to be presented at two sessions of the section, and the time, as usual, was wholly inadequate to present and discuss more than half of this number. Not any of the papers were printed in advance of the meeting and this no doubt was an additional reason why so few of the papers were discussed at length. As an additional proof of this statement it is but necessary to point out that the Report of the Committee on Drug Market, August, 1911, which was available in printed form, not only elicited considerable discussion, but also gave an opportunity for correcting several statements objected to by some of the members present.

Among the papers presented at this section that were at all discussed are the following:

The Pharmacopœial Standard for Desiccated Thyroid Glands, by Hunt and Seidell.—The authors proposed a standard iodine content, 0.2 per cent., with a maximum variation of 0.03 per cent. above or below this figure. The limit for moisture is placed at

6 per cent., and that for ash at 5 per cent. Several of the members present expressed the belief that this standard was high, and that an iodine content of 0.15 per cent. would be more in keeping with the available product.

The Preparation, Quality and Testing of Quinine Tannate.—Puckner and Warren, under this heading, discussed the requirements made for quinine tannate in many of the foreign Pharmacopœias and reported a systematic examination of the product available in this country, giving the names of manufacturers, the degree of purity of their quinine tannate and the various contaminations. This paper was discussed to some extent, and on motion a majority of the members present voted to delete the names of the manufacturers from the paper as printed in the journal of the Association.

Alkaloidal Assaying.—The assay processes of the U. S. P. were more or less systematically discussed by Messrs. Stevens, Dohme, Gordin and others. The subject-matter under discussion was subsequently referred to the U. S. P. Committee of Revision, and was further discussed by the Sub-Committee on Assay Processes.

Gelsemium Alkaloids.—L. E. Sayre presented an additional communication on the alkaloids of gelsemium, and proposed the renaming of the several alkaloids. This communication led to a general discussion on the misleading names applied by manufacturers to some of the rarer alkaloids, but the members of the section were apparently not willing to commit themselves to any definite policy for correcting existing abuses.

Physiological Standardization.—The physiological standardization of drugs was discussed by Messrs. Haskell, Vanderkleed, Edmunds and others. Chas. C. Haskell reported a number of experiments on physiological drug-testing, and in connection with digitalis recommended the use of the one-hour frog method, as outlined by Edmunds and Hale in Bulletin No. 48 of the Hygienic Laboratory, Public Health and Marine-Hospital Service of the United States. Chas. H. Vanderkleed presented a paper in which he recommended the guinea-pig method, described by Reed and Vanderkleed in a previous paper on the subject.

Capsicum.—Wilbur L. Scoville presented a Note on Capsicum, showing the great variation in the strength of capsicum, and suggesting the possibility of the pungency of this drug being used as a simple test for quality. This paper elicited some discussion in

the course of which it was pointed out that the physiological test for capsicum was infinitely more delicate and more reliable than the similar test that has been proposed for use in connection with aconite.

Aconite.—William Mansfield exhibited a number of samples of commercial aconite, discussed the varying qualities now coming into this market, and proposed that the stem crowned root alone be described in the Pharmacopœia of the United States, maintaining that the bud crowned root could be utilized for propagating or continuing the plant.

Ash Content of Drugs.—M. I. Wilbert presented a compilation of data on pharmacopœial limitations of the ash content of drugs, and pointed out that this factor could not at the present time be utilized to advantage. The discussion emphasized the need for permitting rather wide variation in the ash limitation of drugs, particularly in connection with root and leaf drugs.

Permanency of Some Astringent Preparations was discussed by W. L. Scoville, who reported the systematic examination of twenty fluidextracts of drugs containing tannin, during a period of three years. He outlined his method of examining the preparations and laid emphasis on the desirability of using strongly alcoholic menstrua for drugs of this class.

The officers of this section for the coming year are W. O. Richtmann, Satsuma Heights, Fla., Chairman; and C. H. LaWall, Philadelphia, Pa., Secretary.

SECTION ON COMMERCIAL INTERESTS.

The Section on Commercial Interests held two sessions. Franklin M. Apple, the Chairman of the Section, was obliged to leave before the opening session because of sudden bereavement in the family, and B. E. Pritchard, of Pittsburgh, presided. Many of the papers presented at this section were discussed quite exhaustively and the immediate results will no doubt be beneficial.

Among the papers that were read and discussed were the following:

Commercial Monopoly—A Hindrance to Progress in Materia Medica Science, was the title of a paper by F. E. Stewart, in which he discussed at some length the relation of product and process patents to scientific development of medicine.

The Principles and Practices of Bookkeeping were discussed

by Hy. P. Hynson, who commented on some of the shortcomings of the commercial courses taught in colleges of pharmacy. Several additional papers along the same lines were presented, one by Ambrose Hunsberger on Simplified Accurate Methods of Recording Charge Sales, and one by E. Fullerton Cook on the Cost of Conducting Drug Business.

Window Displays were discussed by B. E. Pritchard, who commented on the practices of one of the large drug concerns in Pittsburgh; and in a paper along similar lines by Otto Raubenheimer, who discussed Pharmaceutical Window Displays and commented adversely on some of the objectionable displays that he has observed from time to time.

C. M. Ford presented some comments on the trend of modern pharmacy, and incidentally described a system of drug-store inspection that is being introduced in the City of Denver.

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The Section on Practical Pharmacy and Dispensing, with Louis Saalbach of Pittsburgh, Pa., as Chairman, also held two sessions, at which a number of practical pharmaceutical problems were discussed.

The Color of Tincture of Iron Citro-Chloride was discussed by Otto Raubenheimer, who exhibited a number of samples comparing the National Formulary product with samples made according to other formulas.

A Few Questions Suggested by Comparison of the National Pharmacopœias was the title of a paper by Oscar Oldberg. This paper, in the absence of the author, was read by the Secretary of the Section. Oldberg discussed the desirability of establishing a Section on the Pharmacopœia so that matters relating to the Pharmacopœia could be discussed without interfering with other more or less diverting papers.

Infusion of Digitalis was discussed by Chas. M. Ford and J. Leon Lascoff. Both of these authors pointed out the need for making this preparation extemporaneously from a good quality of leaf. The discussion following the reading of these papers was spirited and at times acrimonious, evidencing considerable variation of opinion as to the objects sought to be attained by the addition of alcohol to the infusion. There was also some difference of opinion regarding the preferable method of keeping digitalis.

A New Color for Pharmaceutical Preparations was described by Chas. H. LaWall, of Philadelphia, Pa., who called attention to some of the possibilities of sulphonated orcein or vegetable red, a coloring matter now widely used by confectioners. This paper elicited considerable discussion on the standardization of colors, in the course of which Otto Raubenheimer exhibited a French publication or code of colors that has been adopted as a standard for color for a variety of purposes.

Sanitation in Pharmacy was discussed by J. Leon Lascoff, who proposed the sterilization of bottles returned to the pharmacy. This led to a rather spirited discussion on the possible abuses that might arise in this connection, many of the members believing that medicine bottles should not be used over again under any pretense.

A Plea for More Working Formulas for Chemicals in the U. S. P., by W. H. Glover, was discussed at some length and the question was finally referred to the Committee on Recipe-Book.

The officers of this section for the ensuing year are P. Henry Utech, Meadville, Pa., Chairman; Wm. A. Hall, Detroit, Mich., Secretary.

SECTION ON EDUCATION AND LEGISLATION.

The Section on Education and Legislation, as usual, held three sessions. The first was presided over by Chairman Charles W. Johnson, who in his address as chairman discussed the desirability of solving the problems of pharmaceutical education. The report of the Secretary, Wilbur J. Teeters, was a comprehensive review of legislation proposed and enacted in the several states. On motion of H. L. Taylor the Secretary was complimented for his comprehensive compilation, and it was further suggested that the section continue the collection of material of this kind.

H. L. Taylor presented a report of the Syllabus Committee which was commented on by E. Fullerton Cook, in a paper on Commercial Training as Outlined in the Syllabus. The shortcomings of the Syllabus were further commented on by C. B. Lowe and others, several of the members taking advantage of the occasion to point out that the Syllabus was in course of evolution, and that the next edition would no doubt be much more perfect than the one now available.

Hy. P. Hynson presented a paper on the Real Educational Needs of the Pharmacist, in the course of which he called atten-

tion to many of the shortcomings in the present-day curriculum of pharmaceutical schools.

The second session of the section was presided over by John C. Wallace of New Castle, Pa., and was generally commented on as being one of the most interesting sessions of the Boston meeting.

The third session, following the established precedent, was a joint session of the section with the National Association of Boards of Pharmacy and American Conference of Pharmaceutical Faculties, at which a number of questions relating to state board examinations were discussed at length.

The officers of this section for the ensuing year are John C. Wallace, New Castle, Pa., Chairman; Wilbur J. Teeters, Iowa City, Iowa, Secretary.

SECTION ON HISTORICAL PHARMACY.

The Section on Historical Pharmacy held two sessions this year, or perhaps more correctly, one session in the afternoon, on the boat returning from Plymouth, and an adjourned session, at the hotel, in the evening. The Chairman of the Section, Joseph L. Lemberger, presided and the programme was replete with interesting subjects. Among the several contributions offered at the afternoon session was the presentation of a scrap-book entitled Hallbergana, by Francis B. Hays of New York. This book contains an interesting collection of material, historical, biographical and otherwise, relating to the late editor of the *Bulletin of the American Pharmaceutical Association,* C. S. N. Hallberg.

At the evening session several additional contributions were presented, among them an illustrated lecture on The Apothecary in Literature, by Edward Kremers. This contribution was a real treat, and thoroughly well appreciated by all who had the privilege of listening to the lecture, and seeing the pictures exhibited by the lecturer.

ADDITIONAL SESSIONS OF THE ASSOCIATION.

In addition to the two general sessions announced on the programme, the Association held a special session on the morning of Wednesday, August 16, at which several Committee reports were received. Another special session was held on Friday afternoon, preceding the meeting of the Section on Historical Pharmacy. The object of this session was to determine the place of meeting for

1912. After considerable discussion Denver was by vote of the members present selected as the place of meeting. The association at this session also adopted a resolution, offered by Joseph P. Remington, endorsing the spirit and the letter of the Pure Food and Drugs Law, and commending Dr. H. W. Wiley for the methods followed by him in enforcing this law. A third special session of the Association was held Friday evening after the adjourned meeting of the Section on Historical Pharmacy. This session was called for the purpose of presenting a number of changes in the By-laws of the Association, providing for the change in the nature of the publications of the Association, the changes necessitated by the By-laws adopted by the Section on Scientific Papers, and also a change in the By-laws providing for the transference of the beginning of the fiscal year of the Association from July to January, and an increase in the salaries of a number of the paid officials of the Association. At the final session of the Association on Saturday morning these several changes were endorsed, and at the conclusion of this session John G. Godding of Boston, President, and the remaining officers for the ensuing year were installed.

The Council of the Association announced the election of H. M. Whelpley of St. Louis, as Treasurer; James H. Beal of Scio, Ohio, General Secretary and Editor; Henry Biroth of Chicago, Honorary President; E. G. Eberle of Dallas, Texas, Chairman of the Council, and Joseph W. England of Philadelphia, Pa., Secretary.

The outgoing officers of the Association were given a vote of thanks for the efficient manner in which they had conducted the business of the Association, and the Boston pharmacists and others who had contributed to the success of the meeting were also given a vote of thanks. It was generally agreed among the members present that whatever uncertainty there might be regarding the future of the Association, there could be no mistaking the fact that the Boston pharmacists and Bostonians generally had proven themselves to be royal entertainers, and that so far as the social events of the annual gatherings might be concerned the Fifty-ninth Annual Meeting of the American Pharmaceutical Association will long be remembered as one of the most pleasant, and socially the most successful that the American Pharmaceutical Association has ever held.

PROGRESS IN PHARMACY.

A QUARTERLY REVIEW OF SOME OF THE MORE INTERESTING LITERATURE RELATING TO PHARMACOLOGY AND MATERIA MEDICA.

By M. I. Wilbert, Washington, D. C.

The past three months have been replete with happenings of interest to the various branches of the drug trade, and it would be difficult indeed to even attempt to accurately reflect, in a limited number of pages, the many and varied influences that are at work at the present time to bring about an improvement of conditions in the drug business.

The literature of the quarter is extensive, and it will be impracticable to call attention to more than a few of the more important publications.

Volume 58 of the Proceedings of the American Pharmaceutical Association has finally been distributed, and while, for a number of reasons, no doubt, the publication of the book has been unusually delayed, the resulting volume is the largest, and in some respects the most valuable, that has appeared up to the present time.

The book contains a total of nearly 1500 pages, and in the report on the Progress of Pharmacy and the many original contributions presented therein adequately reflects the present-day status of Pharmacy.

The Proceedings of the Tenth International Congress of Pharmacy, held at Brussels, September 1 to 6, 1910, have been published, and constitute a large 8vo volume of xlix and 454 pages, with numerous illustrations. The list of members includes the names of upward of six hundred persons more or less well known in pharmaceutical circles abroad. The number of American subscribers is disappointingly small, and serves to emphasize the frequently made assertion that in matters relating to the progress of the sciences of pharmacy this country does not take the comparatively advanced position occupied in medicine and many other lines.

Pharmacopœial Publicity.—An editorial note, commenting on the evident non-compliance with the U. S. P. Convention instruction to give publicity to the progress of the work of revision, expresses doubt as to whether the instruction has been forgotten or neglected or whether it was in the nature of a political promise, and

concludes that a statement on this subject from the committee to the pharmaceutical press of the country would undoubtedly be welcome.—*N. A. R. D. Notes,* 1911, v. 12, p. 904.

German Pharmacopœia.—The now official fifth issue or fifth edition of the German Pharmacopœia is still being discussed and actively criticized in all the well-known pharmaceutical journals. The objects and the uses of this pharmacopœia are not generally recognized, particularly in America, and reviewers in this country frequently criticize the scope and contents of the German Pharmacopœia from a strictly American point of view, forgetting that our own U. S. P., while theoretically a complete and highly commendable work, is a sealed book to many, if not the majority, of retail druggists, and that comparatively few are in a position to or capable of applying the various tests embodied in the U. S. P.

The German Pharmacopœia, on the other hand, is the standard guide for the apothecary, who is by law compelled to comply with all of its requirements. A book review (*J. Am. M. Assoc.,* 1911, v. 56, p. 1218), commenting on this feature of the German Pharmacopœia, points out that this book "is an indication of the services that can and should be rendered by pharmacists for controlling the identity and purity of drugs used in the treatment of diseases."

Japanese Pharmacopœia.—A news note (*Chem. and Drug.,* July 29, 1911, p. 140) points out that the Japanese Pharmacopœia is to be issued in a revised form at the end of 1915. The present edition is being unfavorably criticized.

American Chemical Society.—The summer meeting of the American Chemical Society was held in Indianapolis, June 28 to 30, and is reported to have been an unusually successful meeting. In point of view of attendance it is said to have been the largest summer meeting that the Society has ever held. The Division of Pharmaceutical Chemistry held three sessions, at which a number of pharmacopœial subjects were discussed, the suggestions, in several instances, being referred to the Pharmacopœial Revision Committee for further consideration.—*J. Ind. and Eng. Chem.,* 1911, v. 3, pp. 610–614.

International Association of Chemical Societies.—On April 25, 1911, a preliminary meeting of delegates from a number of European chemical societies met in Paris for the purpose of organizing an international association of chemical societies for the purpose of considering chemical problems of general or inter-

national interest. The work of the association is to consist largely in the nomination of commissions in charge of studying questions submitted to them.

The American Chemical Society, at the recent meeting in Indianapolis, signified its willingness to affiliate, and empowered the president of the society to enter into correspondence with the proper officials to learn the details regarding the proposed organization.—*J. Ind. and Eng. Chem.*, 1911, v. 3, p. 614.

International Pharmaceutical Federation.—An editorial (*Pharm. J.*, London, 1911, v. 87, p. 32) comments on the organization of the International Pharmaceutical Federation, recently completed at The Hague, and points out that in addition to strictly scientific subjects it is proposed to exert a beneficial influence on such subjects as the international arrangements relating to patents and trademarks and commercial treaties affecting matters of this kind. This organization appears to have attracted considerable attention on the continent of Europe, despite the fact that in English-speaking countries the objects and the possibilities of coöperation on the part of pharmaceutical organizations have received little or no consideration.

American Medical Association.—The Los Angeles meeting of the American Medical Association, while not as largely attended as some immediately preceding it, will no doubt prove to have been an important one from many points of view. Not the least important of the several accomplishments of this meeting was the election of the nestor of American medicine, Dr. Abraham Jacobi, to serve as president of the Association. An editorial (*J. Am. M. Assoc.*, 1911, v. 57, p. 122), commenting on his election, asserts that "few if any men in the American medical world to-day can look back on as active a life as that of Jacobi. As a teacher, practitioner, and worker in medical organizations he has been a leader for half a century."

An editorial (*Pacific Pharmacist*, July, 1910, v. 5, p. 83), in commenting on the meeting of the American Medical Association, asserts that the matter of dispensing physicians, counter-prescribing druggists, prescription percentage evil, selling and prescribing patent and fake remedies, and the U. S. P. and N. F. propaganda were warmly discussed. Physicians very frankly admitted that they knew little or nothing about drugs and urged better courses of instruction in materia medica for the medical colleges.

The report of the reference committee on sections endorsed a resolution, regarding trade-marks and patents, referred by the Section on Pharmacology and Therapeutics, and also presented a number of recommendations submitted in the address of the chairman of the delegation from the American Pharmaceutical Association. Not the least important of the several recommendations is the one relating to the education of pharmacists, embodying the suggestion that "Such education should include ethical instruction as well as instruction in the branches usually included in the courses given by colleges of pharmacy."

The report of the reference committee on medical education, in commenting on the work done by the Council on Pharmacy and Chemistry with reference to simplifying the requirements of instruction about drugs in the Pharmacopœia, says: "Everybody admits that valuable time is wasted in giving instruction about useless drugs because they appear in the Pharmacopœia and because state licensing boards are liable to ask about them."—*J. Am. M. Assoc.*, 1911, v. 57, p. 132.

Medical Education.—A recent number of the *Journal of the American Medical Association* (Aug. 19, 1911, v. 57, pp. 630 ff.) presents a description of the medical colleges in the United States and Canada. Accompanying editorials (pp. 654 and 658) discuss the progress that has been made, under the auspices of the Council on Medical Education of the American Medical Association, during the past seven years. During this period the number of medical colleges has been reduced from 166 in 1904 to 120 at the present time. The number of graduates during the same period of time has been reduced from 5747 in 1904 to 4273 in 1911. The amount of money given for medical education has increased from a few thousands of dollars during 1904 to several millions of dollars during the last year.

British Pharmaceutical Conference.—The forty-eighth annual meeting of the British Conference was held at Portsmouth, the opening session being called to order by the president, Mr. W. F. Wells, of Dublin, on the morning of July 25, 1911.

The presidential address dealt mainly with the pharmacy laws of Great Britain and Ireland, with some references as to how they differed from similar laws in Germany and France. The proceedings of the Conference were this year divided into two sections,

Science and Practice, the new arrangement evidently meeting with the approval of the members present.

The papers read in the Science Section are quite up to the usual high standard of the communications presented to this organization, and many of them are on subjects of immediate practical interest. The papers are, as usual, reproduced entire in the current numbers of the British pharmaceutical journals. At the closing session on Thursday, Sir Edward Evans was elected president for the ensuing year.

American Pharmaceutical Association.—The fifty-ninth annual meeting of the American Pharmaceutical Association, held in the City of Boston, August 14 to 19, 1911, will no doubt prove to have been epoch-making for American pharmacy, as the changes in policies that are involved must necessarily bring about a more or less complete modification of the relations existing between the Association and the several branches of the drug trade represented in its membership.

Just what the future has in store for the Association would be difficult indeed to prophesy, but, with its long and honorable history as an incentive, the present and future officers must and will continue along the lines of progress so thoroughly well defined by the founders and the Association.

Whatever differences of opinion may be evidenced regarding the immediate success of the new enterprises, there can be no difference of opinion regarding the abilities of Boston pharmacists as entertainers. Members of the Association from far and near were pleased with the completeness of the preparations for the meeting, and it was generally agreed that few cities can equal and none can excel the City of Boston as a meeting place for the American Pharmaceutical Association.

Dr. H. W. Wiley and the Food and Drugs Act.—Few happenings during recent months have attracted more widespread attention than the controversy that has grown out of a technical infraction of the law by Dr. H. W. Wiley and some of his associates in securing the services of Dr. H. H. Rusby as an expert in connection with the examination of drugs imported at the port of New York. The House Committee on expenditures in the Agricultural Department has conducted an exhaustive investigation regarding the origin and nature of the controversy, and the members

of this committee will no doubt be in position to submit a satisfactory report to Congress at its next meeting.

To Dr. Wiley and his friends the unanimity with which the various periodicals and organizations have espoused his side of the controversy is indeed gratifying, and presages the appreciation that many thinking persons have of his work.

Pure Drugs and Medicines.—Virgil Coblentz discusses the general results of the analysis of two hundred and thirty prescriptions made by him for the New York *World,* and concludes that, if druggists would buy only from reliable firms and employ competent, conscientious assistants, they would be in position to render such service as the public has a right to expect.—*J. Ind. and Eng. Chem.,* 1911, v. 3, pp. 540–542.

Pharmaceutical Specialties.—An editorial points out that American pharmaceutical houses are apparently content to devote their energies to the devising of "pharmaceutical specialties," mere mixtures of well-known medicaments, that are designed to be attractive to both the eye and the palate, and are usually provided with names that are meaningless or, more often, therapeutically suggestive. The editorial concludes with the assertion that the credit accruing to our pharmaceutical manufacturers is discouragingly small; in fact, it is no exaggeration to say that the average American "pharmaceutical specialty" is not only of no benefit to medicine or pharmacy, but is a distinct handicap and detriment to both professions.—*J. Am. M. Assoc.,* 1911, v. 57, p. 576.

Nomenclature.—A recent editorial in the *American Druggist and Pharmaceutical Record* (July 10, 1911), on similarity in pharmaceutical nomenclature, has been reprinted in the *Pharmaceutical Journal* (London, July 29, 1911, p. 133) and is being freely commented on by pharmacists. The proposition to have an international committee which would take into consideration the whole question of pharmacopœial and pharmaceutical nomenclature is an eminently laudable one, and should receive the endorsement of every active pharmacist.

Acidol.—This is described by the Council on Pharmacy and Chemistry as betaine hydrochloride, $C_5H_{11}NO_2HCl$, occurring as colorless crystals freely soluble in water. It contains 23.8 per cent. of absolute hydrochloric acid.—*J. Am. M. Assoc.,* 1911, v. 57, p. 396.

Angelica Oil.—Bolcker and Hahn, by a series of fractional distillations of essential oil of angelica, have succeeded in isolating a

new constituent (*Apotheker Zeitung,* 1911, 219). It is a lactone of the formula $C_{15}H_{16}O_3$, melting at 83° and boiling at 250° at 250 mm. pressure. It forms a di-brom addition product, $C_{15}H_{16}O_3Br_2$. On heating with alcoholic potash, it gives the potassium salt of the oxyacid $C_{15}H_{18}O_4$.—*Chem. and Drug.,* July 29, 1911, p. 164.

Digitalis.—S. Hirohashi presents the results of a study of the quantitative valuation of digitalis, in which he reports his results with the Focke method, using a Japanese variety of *Rana esculenta.* These results would indicate that an infusion strained through muslin is more active than the corresponding preparation filtered through paper.—*J. Pharm. Soc., Japan,* July, 1911.

The Chemistry of Ethyl Ether.—Baskerville and Hamor present the results of a comprehensive study on the chemistry of ethyl ether, including a comprehensive bibliography. The report includes observations on the changes which occur in ethyl ether during storage, the action of oxygen on ether, the detection of peroxides in ethyl ether, and a scheme for the examination of ethyl ether for analytical and anæsthetic purposes, with particular reference to the detection of avoidable impurities.—*J. Ind. and Eng. Chem.,* 1911, v. 3, pp. 378–398.

Baskerville, in a review of the chemistry of anæsthetics, points out that American official ethers call for three to four per cent. of ethyl alcohol, in accordance with an old and erroneous theory that alcohol protects the ether. Alcohol is practically never free from water, and in the presence of water and oxygen forms oxidation products.

Hegonin.—This is described as silver nitrate ammonia albumose, obtained by treating silver ammonium nitrate with albumose. Hegonin is said to contain approximately 7 per cent. of organically combined silver. It occurs as a light-brown powder readily soluble in water. Its aqueous solutions do not coagulate albumin, even on heating, nor are they precipitated by sodium chloride.—*J. Am. M. Assoc.,* 1911, v. 57, p. 396.

Hexamekol.—A news note (*Chem. and Drug.,* July 29, 1911, p. 164) points out that hexamekol is a combination of guaiacol and hexamethylenetetramine. It forms a white crystalline powder, and contains 65 per cent. of guaiacol.

Hormonal.—Peristaltic Hormone-Zuelzer is a liquid extract obtained from the spleen of an animal killed at the height of digestion. Hormonal is a yellowish liquid which is often turbid,

but it is claimed that the slight flocculent precipitate does not affect its efficiency. It is claimed that hormonal has the property of exciting the peristalsis of the intestine and provoking the evacuation of the fæces. Its use is still in the experimental stage.—*J. Am. M. Assoc.*, 1911, v. 57, p. 291.

Maretin.—W. Heubner protests against some of the advertising literature recently sent out by the firm making maretin. He asserts that this substance has a powerful action on the blood, and is far from being the harmless medicament that it is claimed to be by the manufacturer.—*Therap. Monatsh.*, 1911, v. 25, pp. 364–368.

A correction by Dresser is published in the same journal (August, pp. 472–475), and in a reply by Heubner (pp. 476–479) the latter reiterates his belief that maretin is not a safe remedy.

Liquid nitrous oxide, or dinitrogen monoxide, N_2O, in the liquid state, is described by the Council on Pharmacy and Chemistry as a colorless mobile liquid, boiling at 89.8° C., solidifying at —102° C., and having a specific gravity of 0.937 at 0° C. Liquid nitrous oxide returns to the gaseous state when the pressure is reduced and the temperature raised. A number of chemical tests to which the substance should respond are given and its actions and uses are discussed.—*J. Am. M. Assoc.*, 1911, v. 57, p. 563.

Tincture of Opium.—Farr and Wright, in a paper on The Supposed Loss of Morphine in the Preparation of Tincture of Opium, proved by experiments that the loss is real, and varies from 0.8 to 9 per cent. of morphine, with an average of 4.78. The authors suggest that the loss is due to occlusion of the alkaloid in the opium, but they are making further experiments.—*Chem. and Drug.*, July 29, 1911, p. 151.

Oxygen.—Baskerville and Stevenson present a critical study of the bibliography, methods of preparation, and methods of analysis of oxygen, and outline standards of purity recommended for oxygen to be used in medicine. They conclude that the gas should be neutral toward moist, delicate litmus paper; and when passed through an aqueous solution of silver nitrate it should produce no turbidity.—*J. Ind. and Eng. Chem.*, 1911, v. 3, pp. 471–476.

Saccharin.—An unsigned note, commenting on the proposed restricting of the use of saccharin in food, as outline in food inspection decision 135, asserts that 0.3 gramme of saccharin possesses the sweetening power of 165 grammes of cane sugar, and points out that it is hardly conceivable that any one person would daily digest

such an amount of saccharin in food and beverage.—*J. Ind. and Eng. Chem.*, 1911, v. 3, p. 438.

Scarlet R, Medicinal Biebrich, is amido-azo-toluol-betanaphthol, and occurs as a dark brownish-red powder nearly insoluble in water, slightly soluble in benzene and acetone, and easily soluble in chloroform, oils, fats, and phenols. It is slightly soluble in cold alcohol and somewhat more soluble in hot alcohol. It is generally used in the form of ointment, and is said to be useful in stimulating the proliferation of epithelial cells.—*J. Am. M. Assoc.*, 1911, v. 57, p. 291.

Thyroid Standard.—Bennett, R. R., in a paper on the standardization of dried thyroid gland, suggests that it should be done on the basis of 0.15 per cent. of iodine, and describes Baumann's method for determining the iodine. It appears that the iodine standard is most commonly used commercially.—*Chem. and Drug.*, July 29, 1911, p. 151.

New Preserving Medium.—A useful solution for fixing and preserving plants and animals in their natural colors, recently invented by Wickerscheuer, of the Berlin Zoölogic Museum, is prepared by dissolving 100 gms. of alum, 25 gms. of sodium chloride, 12 gms. of potassium nitrate, 60 gms. of potassium carbonate, and 10 gms. of arsenic trioxide in 3000 c.c. of boiling water. To this solution 1200 c.c. of glycerin and 300 c.c. of methyl alcohol are subsequently added. Objects preserved in this liquid are said to retain their form, color, and suppleness to a remarkable degree.—*J. Am. M. Assoc.*, 1911, v. 57, p. 400.